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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/813,692      | 03/21/2001  | Yutaka Shimizu       | 2500.65339          | 3442             |

7590 02/10/2004

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| EXAMINER |
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UHLIR, NIKOLAS J

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| ART UNIT | PAPER NUMBER |
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1773

DATE MAILED: 02/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Advisory Action**

Application No.

09/813,692

Applicant(s)

SHIMIZU ET AL.

Examiner

Nikolas J. Uhler

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--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

THE REPLY FILED 05 January 2004 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE. Therefore, further action by the applicant is required to avoid abandonment of this application. A proper reply to a final rejection under 37 CFR 1.113 may only be either: (1) a timely filed amendment which places the application in condition for allowance; (2) a timely filed Notice of Appeal (with appeal fee); or (3) a timely filed Request for Continued Examination (RCE) in compliance with 37 CFR 1.114.

**PERIOD FOR REPLY** [check either a) or b)]

- a) ☒ The period for reply expires 4 months from the mailing date of the final rejection.
- b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection. ONLY CHECK THIS BOX WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

1. ☐ A Notice of Appeal was filed on \_\_\_\_\_. Appellant's Brief must be filed within the period set forth in 37 CFR 1.192(a), or any extension thereof (37 CFR 1.191(d)), to avoid dismissal of the appeal.
2. ☒ The proposed amendment(s) will not be entered because:
- (a) ☒ they raise new issues that would require further consideration and/or search (see NOTE below);
- (b) ☐ they raise the issue of new matter (see Note below);
- (c) ☒ they are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or
- (d) ☐ they present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: see attached sheet.

3. ☐ Applicant's reply has overcome the following rejection(s): \_\_\_\_\_.
4. ☐ Newly proposed or amended claim(s) \_\_\_\_\_ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).
5. ☒ The a) ☐ affidavit, b) ☐ exhibit, or c) ☒ request for reconsideration has been considered but does NOT place the application in condition for allowance because: Because it is drawn to the non-entered amendment.
6. ☐ The affidavit or exhibit will NOT be considered because it is not directed SOLELY to issues which were newly raised by the Examiner in the final rejection.
7. ☒ For purposes of Appeal, the proposed amendment(s) a) ☒ will not be entered or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.

The status of the claim(s) is (or will be) as follows:

Claim(s) allowed: none.

Claim(s) objected to: none.

Claim(s) rejected: 1-6 and 11-13.

Claim(s) withdrawn from consideration: \_\_\_\_\_.

8. ☐ The drawing correction filed on \_\_\_\_\_ is a) ☐ approved or b) ☐ disapproved by the Examiner.
9. ☐ Note the attached Information Disclosure Statement(s) (PTO-1449) Paper No(s). \_\_\_\_\_.
10. ☒ Other: See attached response to arguments

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**Continuation of box 2(a):** The proposed amendment will not be entered because it inserts a new limitation that was not earlier presented in the examination of this application. Specifically, applicant's proposed amendment to claims 1 and 11 would insert the limitation "a compound existing on the antiferromagnetic bonding layer, said compound including one of oxygen, nitrogen, sulfur, and carbon combined with an element included in the antiferromagnetic bonding layer." This limitation requires the compound layer to be formed above the antiferromagnetic bonding layer. The previously presented claims required the compound to exist "between the antiferromagnetic layer and the second pinned magnetic layer." As the antiferromagnetic layer is below the antiferromagnetic bonding layer, the previous claims were open to the interpretation that the claimed "compound" could exist between the antiferromagnetic layer and the antiferromagnetic bonding layer. The proposed amendment precludes such an interpretation. Further, though a similar limitation was presented earlier in claim 11, claim 11 required a "layered polycrystalline structure," a first "crystalline" ferromagnetic layer, and a 2nd "crystalline" ferromagnetic layer. Claim 1 has not ever required the ferromagnetic layers to be crystalline. Further claims 14 and 15 require the AFM bonding layer to be made of Ru. This limitation was not earlier presented. Thus, the proposed amendment presents new combinations of limitations that were not earlier presented and therefore require further search and consideration to determine patentability.

***Response to arguments***

In the interest of expediting the examination of this application, the examiner herein addresses some of the arguments raised by the applicant in the proposed after final amendment.

First, applicants argue that the prior final rejection was non-responsive, as the applicant feels the examiner disregarded and failed to respond to applicant's arguments raised in amendment A. Specifically, the applicant asserts that no new art was presented and the grounds of rejection were identical to that earlier presented by the examiner, and therefore the dismissal of the applicants arguments as "moot in view of the new grounds of rejection" was inappropriate and unwarranted.

The examiner understands applicant's position, but respectfully disagrees. Applicants arguments in amendment A were drawn to limitations with respect to new interfacial roughness limitations inserted in claims 1 and 11. The examiner specifically addressed these new limitations at sections 8-9, 37, and 41-42 of the final office action, asserting that because the structure, composition, and method of forming the structure taught by the prior art was substantially similar to that of the instantly claimed invention, the interfacial roughness would be necessarily met. Thus, all of the applicant's arguments were addressed in the final rejection.

Further, the examiner acknowledges that no new art was cited and that the statement of rejection, i.e. "Claims XYZ are rejected under 35 U.S.C 102(e) as anticipated by reference X" in the final rejection was the same as that presented by the non-final rejection. However, the grounds of rejection (the substantive portion of the

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rejection underneath the statement of rejection) in the final rejection was different than that of the non-final rejection. This is evidenced by the fact that sections 8-9, 37, and 41-42 of the final rejection are either not present or are not the same as similarly numbered sections in the non-final action. Thus, the final rejection did in fact present a new ground of rejection that addressed applicant's arguments. The examiner respectfully submits that he carefully and completely considered applicant's previous arguments, and it was certainly not his intention to give the applicant the impression that their arguments were disregarded.

The bulk of the applicants other arguments are with respect to the lack of an explicit teaching in the Singleton or Gill references as to the interfacial roughness between the 2nd pinned layer and the non-magnetic spacer layer. While the examiner once again acknowledges that these references do not explicitly teach this limitation, the layer structures presented by these references are substantially similar to that of the instant claims, are formed by substantially similar methods, and from substantially similar materials. Thus, it is reasonable to infer that the layers will have substantially similar properties, i.e. interfacial roughness. The examiner acknowledges that the applicant's argument is potentially valid. However, absent a *showing* (emphasis added) that the prior art does not necessarily possess the properties (i.e. roughness) claimed, though it is formed in a similar manner and has many structural and material similarities to that of the instantly claimed invention, the argument is not persuasive. If applicant did indeed provide data to support their argument, the examiner would likely find it to be persuasive.

The examiner also notes applicant's arguments with respect to Singleton and the composition of the AFM layer. The examiner notes that section 12 of the final office meant to reference AFM layer 309 of the prior art, not layer 307 as asserted by the applicant in the arguments. The examiner agrees that NiMn would not be appropriate for use as layer 307 (the *AFM coupling layer*) in Singleton. However, it would be appropriate for use as layer 309 (the AFM layer).

The examiner notes the applicant's argument of adventitious results as stated beginning at the last paragraph of Page 9 of the proposed amendment. While this argument is intriguing, the argument is not supported by evidence and is directed to the structure that is claimed in the non-entered amendment. Should the applicant continue to pursue the application in such a way as to have the proposed amendment entered, and then provide evidence supporting their argument of unexpected results that is commensurate in scope with the claims (i.e. a showing that a structure commensurate in scope with the layer structure of the claims (such as that of Singleton or Gill) does not necessarily possess the claimed interfacial roughness, combined with a showing that improving the interfacial roughness improves the properties of the magnetoresistive film), such an argument would likely be considered to be persuasive.

Finally, the examiner also notes applicant's arguments with respect to the structure shown in figure 5 of the instant application. The examiner acknowledges that the structure shown in figure 5 does not appear to be taught in Singleton or Gill. However, the pending claims are not limited to the structure shown in claim 5. Though the proposed amendment *more clearly* claims the structure of figure 5 and would likely

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overcome the cited prior art, it has not been entered in lieu of the fact that the proposed amendment presents a new combination of limitations that were not earlier considered by the examiner, and thus requires further search and consideration to determine patentability.


Should the applicant's representative wish to discuss the application further in an effort to expedite examination, the examiner would be happy to oblige to an interview.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikolas J. Uhlir whose telephone number is 571-272-1517. The examiner can normally be reached on Mon-Fri 6:30 am - 4 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul J. Thibodeau can be reached on 571-272-1516. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0389.

  
nju

  
Paul J. Thibodeau  
Senior Patent Examiner